Carcinoma of the Rectum

Low Abdominal Transverse Incision for Resection With End-to-End Anastomosis

LEONID S. CHERNEY, M.D., *San Francisco*

SUMMARY

On the basis of published studies of the lymphatic spread of carcinoma of the rectum, tumors lying as low as the anterior peritoneal reflection may be treated by segmental resection with end-to-end anastomosis. Statistics of five-year survivals in these published studies indicate that for tumors in such locations, a segmental resection offers the same chance for cure as an abdominoperineal resection.

The transverse low abdominal incision previously described by the author permits better exposure, facilitates the performance of anastomosis which can be made at a greater depth, and thus enables the surgeon to resect a wider margin distal to the tumor.

THE great advance in the treatment of carcinoma of the rectum and of the rectosigmoid junction dates back to the introduction by Miles of the abdominoperineal resection. While this procedure retains its superiority as a single method of attack on all lesions from the distal sigmoid colon to the anus, there has been a growing feeling among surgeons that in some cases the sphincter has been sacrificed unnecessarily. This feeling springs from a belief that, if the tumor is in certain locations, segmental resection with end-to-end anastomosis can be just as effective and yet leave the sphincter intact—an important consideration to the patient.

Opponents of segmental resection for cancer at or below the rectosigmoid junction—among them some of the outstanding surgeons of today—oppose the procedure on the ground that it is not sufficiently radical and therefore reduces the chances for cure. They hold that in addition to resecting the superior rectal group of lymph nodes, it is necessary (1) to remove the levators ani, thereby resecting the lateral lymph vessels, in order to avoid metastatic involvement, and (2) to deal with retrograde spread of the tumor by removing the entire rectum, including the anal canal.

However, investigators have developed apparently sound evidence that, with the growth located above the levator ani muscles, the lateral lymph vessels are not involved. Moreover, with the tumor so situated, it is practicable by segmental resection to remove the growth and an ample margin of cancer-free rectum distal to it.

From the Department of Surgery, University of California Medical School, San Francisco.

Recent statistics indicate that abdominoperineal resection does not result in a significantly higher percentage of apparent five-year cures than does segmental resection in selected cases. In 1948, Dixon[4] reported 67.7 per cent five-year survivals for a series of 272 patients in whom end-to-end anastomosis had been performed. This is comparable with a composite of the results obtained by the more extensive procedure. Gray[6] reported that 15 of 31 patients treated by segmental resection were alive and well at the end of five years, a 48.4 per cent "cure" rate. It should be noted with regard to Gray's series that the 16 patients who died had either a far advanced lesion or a growth lying low in the rectum (below the reflection of the peritoneum); they were patients who in the more discriminate judgment of today would be treated by abdominoperineal excision.

In selecting patients for segmental resection, the usual avenues of dissemination of rectal carcinoma must be considered, especially the lymphatic route and direct extension. If tumor cells have been borne away by the blood stream, no surgical procedure can offer much hope of cure. All accepted operations for carcinoma aim at the removal of the neoplasm with its direct ramifications as well as the regional lymphatic nodes.

Black and Waugh[1] studied the extent of intramural extension of carcinoma of the sigmoid colon and of the rectum and found it to be less than half a centimeter. Their statistics indicate that direct extension of the tumor along the bowel wall does not constitute a serious problem.

The lymphatic spread of carcinoma of the rectum has been thoroughly investigated, with the use of a special clearing technique, by Gilchrist and David,[5] and subsequently by Coller, Kay and MacIntyre,[3] and by Glover and Waugh.[1] They all agree that the natural route for the lymphatic spread is cephalad; retrograde metastases occur rarely and only in advanced cases in which the superior lymphatic nodes have already been blocked by tumor cells. The most remote retrograde metastasis encountered by Gilchrist and David was 5 cm. below the primary growth. Out of 100 specimens examined by Glover and Waugh, only 3 per cent showed involved lymph nodes more than 2 cm. distal to the primary lesion. The lateral lymphatic vessels run along the levator ani muscles and drain the rectum at the level of their insertion. Coller, Kay and MacIntyre demonstrated that lateral spread can occur only in lesions located in the terminal 3 cm. of the rectum.

Carcinoma of the anal canal obviously cannot be resected without including the sphincters in the block of tissue removed. Likewise, carcinoma arising in the terminal 3 cm. of the rectum is not amenable to segmental resection, since removal of the lateral lymphatics entails resection of the levator ani muscles. Not until a level is reached where the lateral metastases can be ruled out with reasonable certainty may one begin to think about preserving the sphincter. On the basis of the reported extent of retrograde metastases, it would appear that a distance of 4 cm. between the lower border of the tumor and the levator ani muscles would allow resection with a safe margin of 3 cm. and leave a cuff of the distal rectum for anastomosis. In practice, however, even the proponents of the segmental resection reserve this procedure for growths lying not lower than the anterior peritoneal reflection. In the early wave of enthusiasm over the preservation of the sphincter, the segmental resection was used for tumors lying too low by the present standards; local recurrences have occurred, tending to discredit this procedure even for more favorably situated growths. It should be borne in mind, however, that local recurrence is not unknown even after the more radical Miles procedure. The proximal spread of the tumor is not a deciding factor, since in either operation resection of the same length of the sigmoid and of the inferior mesenteric artery with the associated lymph nodes can be accomplished.

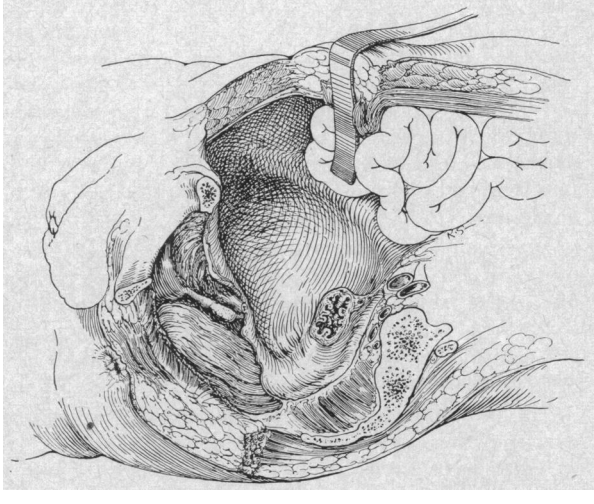

Figure 1. — Diagrammatic cross-section demonstrating the directness of the approach to the pelvic structures.

One practical problem remains: Can the surgeon resect sufficiently far beyond the tumor and reestablish the continuity of the bowel? One argument against the preservation of the terminal rectum is that, with his eye on the difficulty of anastomosing the bowel in the depth of a funnel, the surgeon is apt to skimp on the length of the rectum resected.

This difficulty can be overcome by the use of the low abdominal transverse incision introduced by the author in 1941;[2] it gives a wide exposure of the pelvis and permits anastomosis of the rectum practically at the level of the pelvic diaphragm without any difficulty. The ease of performing the anastomosis will encourage the surgeon to remove more than the minimum margin of rectum beyond the lesion, thus assuring optimal results.

The better exposure afforded by the transverse incision is accounted for primarily by the fact that the center of the incision, rather than its end, is over the operative field; obviously, the separation between the wound edges is maximum in the center. The greater diameter of the lower abdomen in the transverse axis and the absence of any tendency for the wound edges to approximate, even under light anesthesia, are also contributing factors; as a rule, no abdominal retractors are required.

The technique of the incision has previously been fully described.[2] Briefly, the skin incision is transverse, running just inside the pubic hair line, curving slightly laterally, and stopping two finger-breadths from the anterior superior iliac spines. The aponeurosis of the external and internal oblique muscles constituting the anterior rectus sheath is incised in the same line. The inferior portion of the rectus sheath is dissected off the rectus muscles as far as their insertion into the pubis. The rectus tendons are then detached from the bone (without leaving any cuff for reattachment) and are reflected superiorly. The transversalis fascia and the peritoneum are opened transversely about 1 cm. above the bladder.

In closing the incision, the rectus tendons are sutured not to the pubis, but to the deep aspect of the rectus sheath. The rectus muscles should be pulled down gently, with no forcible attempt at ap-

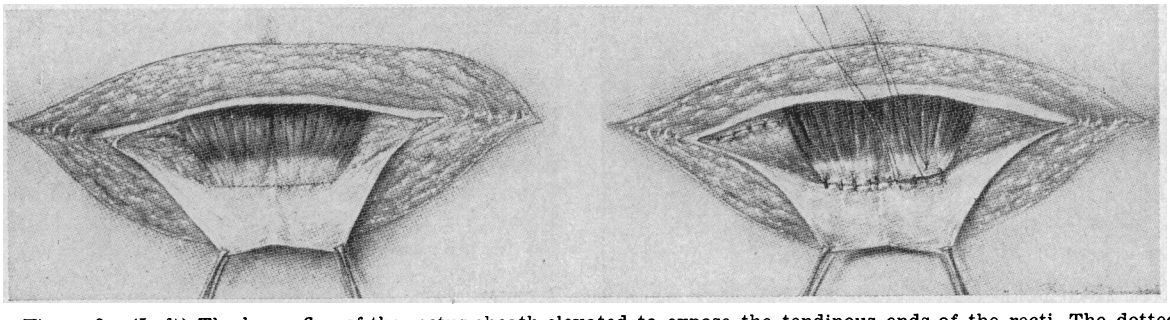

Figure 2.—(Left) The lower flap of the rectus sheath elevated to expose the tendinous ends of the recti. The dotted line indicates where they are to be divided. (Right) Showing suturing of the recti to the lower flap of the rectus sheath.

proximating them to the bone; the level of the suture line varies in different patients, depending on the tonicity of the muscles and the relative lengths of tendon and muscle below the incision in the rectus sheath. The rectus sheath is sutured in a routine fashion.

The postoperative advantages of the incision include greater comfort of breathing, coughing and turning in bed. The strength of the abdominal wall following this approach has been proved by the absence of dehiscence and a negligible incidence of postoperative hernia.

At this point a warning must be sounded regarding the somewhat similar Maylard-Bardenheuer incision which divides all structures, including the rectus muscles, in the same transverse line. The considerable incidence of hernia after this incision should be a sufficient deterrent to those who might be inclined to avoid the little additional dissection involved in detaching the rectus muscles at the point of insertion.

490 Post Street.

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